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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/597,708

08/04/2006

Arjan Franklin Bakker

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
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EXAMINER

TURNER, SAMUEL A

ART UNIT

PAPER NUMBER

2877

MAIL DATE

DELIVERY MODE

08/22/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,708	<b>Applicant(s)</b> BAKKER, ARJAN FRANKLIN	
	<b>Examiner</b> SAMUEL A. TURNER	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Preliminary Amendment***

The preliminary amendment filed 4 August 2008 has been entered.

### ***Information Disclosure Statement***

The international search report submitted on 8 August 2008 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. The information referred to therein has not been considered as to the merits.

### ***Title***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the **invention** to which the claims are directed.

### ***Abstract***

The abstract of the disclosure is objected to because the abstract must be limited to single paragraph on a separate sheet within the range of 50 to 150 words. Correction is required. See MPEP § 608.01(b).

### ***Drawings***

The drawings received on 4 August 2008 are accepted by the Examiner.

### ***Claim Objections***

Claims 1-7 are objected to under 37 CFR 1.75(c).

Claims 1, 3, 4, 6, and 7 include the phrase “the main part(s)” of the interferometer. There is no antecedent basis for “the main part”, nor is the main part defined. Applicant appears to be referring to all other optical

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elements of the interferometer, but the main part could also refer to a critical beam steering element, such as a penta-prism.

In claim 1, the term “it” does not adequately refer the previously claimed structure. Claims 2-6 are dependent on claim 1 and therefor are included in the objection to claim 1.

With regard to claims 3, 4, and 6. Applicant claims a number of interferometers but fails to distinguish between the interferometer of claim 1 and the additional interferometers found in claims 3, 4, and 6.

Claim 7 is directed to a method for positioning, however there are no method steps claimed. Claim 7 is drafted as an apparatus claim and for purposes of any rejections will be treated as an apparatus claim.

Note: The use of reference characters in the claims , while not improper, is to be considered as having no effect on the scope of the claims, see MPEP § 608.01(m).

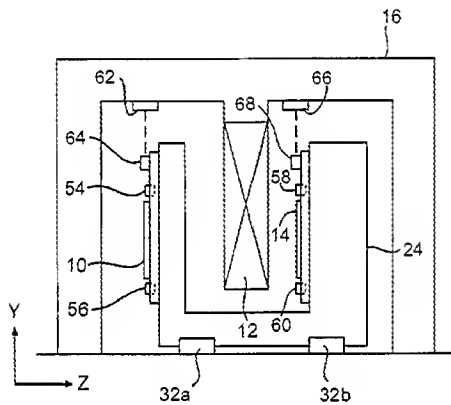
***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

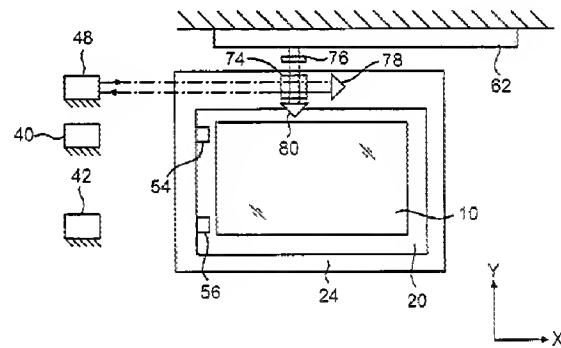
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, and 7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hamada et al(6,570,641).



**FIG. 2**



**FIG. 5B**

With regard to claim 1, Hamada et al teach a system for positioning a product(Fig. 5B), comprising a chuck(Fig. 5B, 20) for supporting the product(Fig. 5B, 10), an intermediate stage supporting said chuck(Fig. 5B, 24), and a stationary base(Fig. 5B, 16) supporting said intermediate stage, whereby the chuck can move with respect to the intermediate stage in a first direction X(Fig. 5B, Y), and the intermediate stage can move with respect to said stationary base in a second direction Y(Fig. 5B, X), furthermore comprising at least one laser interferometer(Fig. 5B; 48, 62, 74, 76, 78, 80) for

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measuring the position of the chuck relative to the stationary base, the main part of said laser interferometer(Fig. 5B; 74, 76, 78) being attached to said intermediate stage, so that it can measure the distance between a reflector on the chuck(Fig. 5B, 80) and a reflector(Fig. 5B, 62) on the stationary base.

As to claim 2/1, Hamada et al teach wherein said reflector on the stationary base is an elongated plane mirror reflector(Fig. 5B, 62), having a length larger than the maximal displacement of the intermediate stage in said second direction Y(column 7, lines 55-57).

As to claim As to claim 5/1, Hamada et al teach wherein said reflector on the chuck is a cube corner reflector(Fig. 5B, 80).

With regard to claim 7. Hamada et al teach a method for positioning a product by means of a system(Fig. 5B) comprising a chuck(Fig. 5B, 20) for supporting the product(Fig. 5B, 10), an intermediate stage(Fig. 5B, 24) supporting said chuck, and a stationary base(Fig. 5B, 16) supporting said intermediate stage, whereby the chuck can move with respect to the intermediate stage in a first direction X(Fig. 5B, Y), and the intermediate stage can move with respect to said stationary base in a second direction Y(Fig. 5B, X), furthermore comprising at least one laser interferometer(Fig. 5B; 48, 62, 74, 76, 78, 80) for measuring the position of the chuck relative to the stationary base, wherein the distance between a reflector(Fig. 5B, 80) on the chuck and a reflector(Fig. 5B, 62) on the stationary base is measured by

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means of a laser interferometer, whereby the main part(Fig. 5B; 74, 76, 78) of that laser interferometer is attached to said intermediate stage.

In Hamada et al the arbitrarily assigned X and Y axes are reversed when compared to Applicant's.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hamada et al(6,570,641) in view of Cameron(5,363,196).

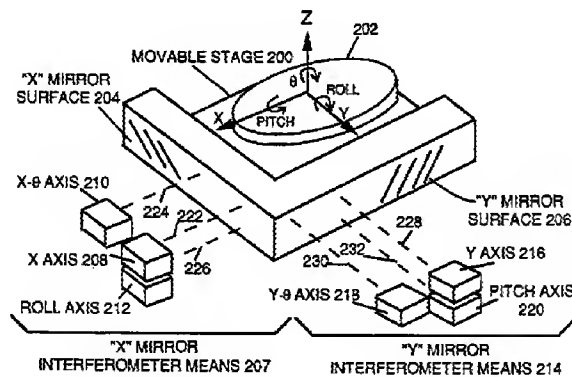


FIGURE 2

As to claim 3/1, Hamada et al **fail to teach** wherein the main parts of two laser interferometers are attached to said intermediate stage, each for

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measuring the distance between a respective reflector on the chuck and the same elongated plane mirror reflector in the stationary base.

As to claim 4/1, Hamada et al **fail to teach** wherein the main parts of three laser interferometers are attached to said intermediate stage, for measuring distances in the first direction X between one or more reflectors on the chuck and one or more plane mirror reflectors in the stationary base.

### **CLAIMS 3 and 4:**

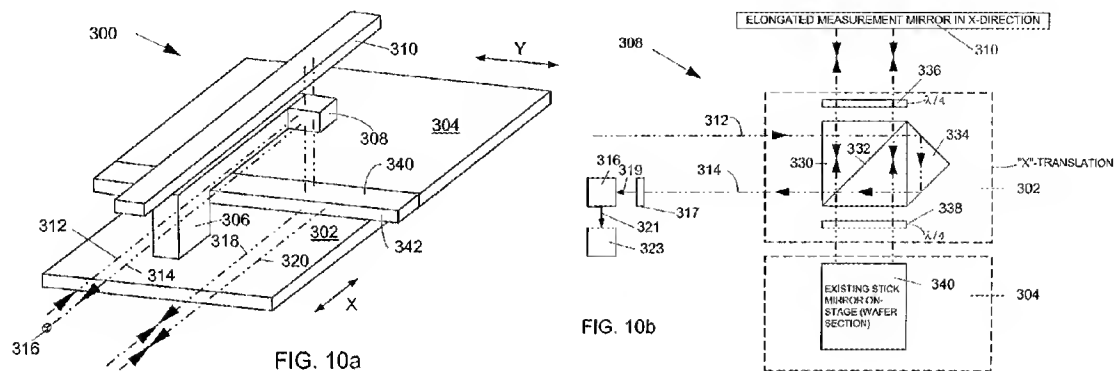
Cameron teaches the use of at least three interferometers placed along the Y axis of a photolithographic stage(Fig. 2). The first(Fig. 2, 208) and second(Fig. 2, 210) interferometers measure displacement in the X direction, and the difference between the first and second interferometer measurements is the rotation about the Z axis. The third(Fig. 2, 212) interferometer, placed in a plane below the first and second interferometers also measures the displacement in the X direction. The difference between the third and second interferometer measurements is the rotation about the Y axis.

With regard to claims 3 and 4, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hamada et al by adding additional interferometers on the intermediate stage in order to measure additional degrees of freedom. One additional interferometer for determining the rotation about one axis of the stage and two additional interferometers for determining rotation about two different axes of the stage.



The motivation for this modification is found in Cameron which is to measure additional degrees of freedom of the stage.

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hamada et al(6,570,641) in view of Hill(6,650,419).



As to claim 6/1, Hamada et al fail to teach wherein the main part of a laser interferometer is attached to said intermediate stage for measuring the distance in the third direction Z between a reflector on the chuck and a reflector on the stationary base, which direction is perpendicular to the first direction X and the second direction Y. In Hill the arbitrarily assigned X and Y axes are reversed when compared to Applicant's.

## CLAIM 6:

Hill teaches an interferometer which measures the displacement of the stage in the Z direction. The interferometer 308 is mounted on the intermediate stage 302 by bracket 306. A first mirror 340 is mounted on the chuck 304 and a second mirror 310 is mounted off stage, on the base.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hamada et al by adding the Z interferometer, of Hill, to the carriage(intermediate stage) 24. The support would be positioned on the carriage 24 in support the interferometer over the edge of the chuck where the first mirror is positioned in the chuck displacement direction. The second mirror would be placed on the bridge(base) 16 in the direction of the intermediate stage displacement.

The motivation for this modification is found in Hill, which is to measure the displacement of the stage in the Z direction.

***Relevant Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chitayat(3,434,787), see figure 1; Mottier(3,556,660), see figure 1; Tsuchiya et al(6,211,965), see figures 1-3; and Binnard et al(2002/0109823), see figures 6 and 7.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Samuel A. Turner/  
Primary Examiner  
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